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**M I L L E R   &   V A N   E A T O N**  
**P. L. L. C.**

MATTHEW C. AMES  
KENNETH A. BRUNETTI†  
FREDERICK E. ELLROD III  
MARCI L. FRISCHKORN\*  
MITSUKO R. HERRERA†

\*Admitted to Practice in  
Virginia Only

†Admitted to Practice in  
California Only

Incorporating the Practice of  
Miller & Holbrooke

1155 CONNECTICUT AVENUE, N.W.  
SUITE 1000  
WASHINGTON, D.C. 20036-4320  
TELEPHONE (202) 785-0600  
FAX (202) 785-1234

**MILLER & VAN EATON, L.L.P.**  
44 MONTGOMERY STREET  
SUITE 3085  
SAN FRANCISCO, CALIFORNIA 94104-4804  
TELEPHONE (415) 477-3650  
FAX (415) 398-2208  
WWW.MILLERVANEATON.COM

**ORIGINAL**

WILLIAM L. LOWERY  
WILLIAM R. MALONE  
NICHOLAS P. MILLER  
HOLLY L. SAURER†  
JOSEPH VAN EATON

†Admitted to Practice in  
Maryland Only

OF COUNSEL:  
JAMES R. HOBSON  
JOHN F. NOBLE

**RECEIVED**

February 2, 2001

**FEB 2 2001**

**FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY**

Magalie Roman Salas  
Secretary  
Federal Communications Commission  
Washington, D.C. 20554

Re: King County (WA) Petition, DA 00-1875, CC Docket 94-102

Dear Ms. Salas:

This ex parte communication is submitted pursuant to Section 1.1206 of the Rules in response to requests from the Policy Division, Wireless Telecommunications Bureau, that the National Emergency Number Association ("NENA") elaborate on the discussion summarized in our ex parte letter of January 12, 2001, on the referenced topic. In brief, the Division is seeking to evaluate the burden on 9-1-1 Authorities if they were required to pay for all wireless and wireline competitive carrier connections to the 9-1-1 Selective Router ("SR"). As NENA noted in its January 12<sup>th</sup> meeting with Division staff members, this is a possible and even likely outcome of any FCC decision to establish a cost "demarcation point" on the trunk side of a Mobile Switching Center ("MSC").

Attached in response to an earlier Policy Division request is a study by a NENA task force of the Call-Associated Signaling ("CAS") and Non-Call-Associated Signaling ("NCAS") methods of transmitting wireless E9-1-1 callers' phone numbers and locations. Included in the study are a descriptive summary, a comparative graph, a sheet of "Differential Cost Study Calculations," a table captioned "Significant Cost Factors," and three slides depicting the CAS, NCAS and "Hybrid CAS" methods of delivering E9-1-1 information.

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A B C D E

Summary: In metropolitan areas of any size, the number of facilities-based wireline ("CLEC") and wireless competing carriers requiring connections to the SR switches of an incumbent local exchange carrier ("ILEC") network<sup>1</sup> to complete 9-1-1 calls ranges from 10 to several times 10. Because a 9-1-1 Authority cannot control the placement of MSCs or CLEC switches, many are far removed, even across state lines, from SRs.

Assuming that costs of particular trunks will be uniform in a given ILEC serving area, whether used for commercial connection or for public safety purposes, a rough idea of relative burdens can be obtained simply by comparing numbers of trunks used for each purpose. The attached Declaration<sup>2</sup> from John R. Melcher, Director of Management Information Systems for the Greater Harris County (Houston) 9-1-1 Emergency Network and Second Vice President of NENA, estimates that the ratio, in major metropolitan areas, of competitive carrier (wireless and CLEC) commercial connections to the Public Switched Telephone Network to SR connections for 9-1-1 purposes is in the range of 500 to 1 to 1000 to 1.

Evidence. The information below confirms the common-sense hypothesis that it is easier for each competing wireless carrier or CLEC to afford a single connection to an SR than it is for a single PSAP to pay for the connections of tens of carriers.

This conclusion is reinforced by the recognition that competing carrier service rates are not capped by regulation, while 9-1-1 Authority budgets are limited – even if supported through subscriber surcharges – by the popular perception that mandatory contributions to public safety systems are a form of taxation.

The following data from metropolitan regions is not comprehensive,<sup>3</sup> but NENA believes it to be representative of the state of urban and suburban telecommunications competition and the implications for public safety throughout the country.

Chicago, Illinois-St. Louis, Missouri

NENA's President, Norm Forshee, reports the following from Chicago and from his own St. Clair County, Illinois, which is near St. Louis, Missouri.

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<sup>1</sup> SRs are the intake points for 9-1-1 calls that terminate at Public Safety Answering Points ("PSAPs"). The network from the SR to the PSAP typically is leased by the PSAP from an ILEC. In a small minority of cases, the SR-to-PSAP network segment is owned by the 9-1-1 Authority.

<sup>2</sup> The Declaration submitted today is a facsimile and will be replaced as soon as possible by the original bearing Mr. Melcher's original signature.

<sup>3</sup> We found CLECs and wireline carriers reluctant to discuss numbers of trunk connections or the prices paid for them.

Ameritech counts 2100 CLEC trunks connected to 9-1-1 SRs in its Illinois serving areas. Of these, 139 are connected in Chicago from 31 CLEC switches to two SRs. Assuming a monthly charge of \$93.00 per trunk,<sup>4</sup> the additional cost to the City of Chicago if it were required to pay for CLEC connections to SRs, would be \$155,124 per year. For all 2100 CLEC trunks, the cost of connections would be 15 times greater -- \$2,343,600.

The Illinois Commerce Commission reports that 243 CLECs have been certified in the state. Since most of these are approved for statewide service, there is no way to tally or identify these by communities served.

The six wireless carriers serving St. Clair County have their MSC's across the Mississippi River in St. Louis, Missouri. They include AT&T, Nextel (3), Southwestern Bell Mobile (7), Sprint (7), Verizon (3) and VoiceStream (soon to be operational). The numbers in parentheses are 9-1-1 SR trunk connections, where known. Given the distance of the MSCs from the St. Clair SRs, the per-trunk charge would be far greater than the \$93 per month the County pays for connecting those SRs to wireline central offices.

Two CLECs known to be implementing service in the near term have similarly remote switches. They have declined to provide cost information.

### Minnesota

#### ***Minneapolis-St. Paul***

*Source:* Metropolitan 911 Board, St. Paul ([npollock@mn-metro911.org](mailto:npollock@mn-metro911.org))

Seventeen facilities-based CLECs are in active service in the Twin Cities area, with another 35 entrants pending. Among these are:

- AT&T Local Services/TCG
- Brooks Fiber
- Eschelon
- Frontier Local Services
- Global Crossing Local Services
- Integra Telecom
- Intermedia Communications
- KMC Telecom
- Lakedale Link
- MCI Worldcom
- Onvoy
- MediaOne/AT&T Broadband

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<sup>4</sup> This is the monthly charge St. Clair County pays per trunk, which differs from Chicago. It is used in the absence of specific prices from Chicago.

NorthStar Access  
McLeod USA  
Teligent  
Winstar

The area is served by six ILECs: Citizen, Eckles, Frontier, Scott Rice, Sprint and Qwest.

CLECs pay for their SR connections; wireless carriers are reimbursed according to state law.

The Minnesota Telephone Association is reported to be conducting discussions looking toward legislation that would treat CLECs (and perhaps wireless carriers) as ILECs are treated. NENA has no details.

At least two CLECs are seeking “approval to integrate into the [Twin Cities] metro area 911 network from remote switches” – Sprint ION from Illinois, and AT&T Digital Link from Kansas City. Under conventional LEC tariffs, cost of connection rises with distance.

Extrapolating from 525 CLEC trunks as of July 2000 to an estimated 600 today, the total cost of trunk terminations at \$22 apiece per month would be \$13,200 per month.

### ***State of Minnesota***

*Source:* Minnesota Department of Administration (jim.beutelspacher@state.mn.us)

Currently there are two 9-1-1 service providers in Minnesota; Qwest and Independent Emergency Services. Between them, they provide SR-based enhanced 9-1-1 services under tariff and contract in 77 of the 87 Minnesota counties on twelve different 9-1-1 SR platforms. The 9-1-1 systems were funded by a combination of local government property taxes, State General Funds, and telephone subscriber fees.

The following estimated costs for CLEC service for Minnesota assume 200,000 CLEC subscribers among 30 CLEC switches, each with connectivity to several regional 9-1-1 SRs. Based on average ILEC and 9-1-1 service provider prices, we estimate:

- \$18,000.00 per month (200,000 records at \$0.09 per subscriber record) for CLEC data updates;
- \$45,000 per month (600 9-1-1 trunks in CLEC switches at \$75.00 per trunk) for CLEC outswitching;
- \$14,200.00 (200,000 records at \$7.10 per 100 records) for storage in the 9-1-1 databases;
- \$28,800.00 (600 9-1-1 circuits averaging 25 miles each at \$48.00 per circuit) for

transport of circuits to the SRs; and

- \$25,200 (600 SR ports at \$42.00 per port) for connections at SRs.

That would add up to \$131,200.00 per month, or \$0.66 per subscriber. These costs would be in addition to the existing charges and costs which the Minnesota Statewide 9-1-1 Program is paying from funds generated by the current \$0.27 statewide 9-1-1 fee.

It is important to remember that entry of a CLEC does not generally add new customers and, thus, new subscriber fees. Instead, their customers typically are former ILEC subscribers. CLEC entry adds infrastructure and other expenses to 9-1-1 systems, essentially without increasing the income from fees. Although new Minnesota entrants have thus far been covering their network and database costs for the continued provision of 9-1-1 service, government agencies have incurred added costs due to CLEC startups.

If the concern is competitive parity, it makes sense to simply set the demarcation point at the selective router or equivalent for ILECs, CLECs and wireless carriers.

#### Texas

In the attached affidavit of Carey Spence, Deputy Executive Director of the Commission on State Emergency Communications of Texas ("CSEC-TX"), the issue of CLEC payment for SR connections is front and center. (¶ 2) Absent a Texas Public Utility Commission ("TPUC") determination of who pays for these connections, the issue is ripe for FCC resolution in the King County proceeding.<sup>5</sup> CSEC-TX continues to urge that the demarcation point be set at the selective router for all telephone carriers, wireless and wireline. While CSEC-TX has been able to obtain for wireless carriers the benefit of a flat rate for 9-1-1 trunking where an ILEC is the sole supplier, the 9-1-1 agency is assuming that to be an unstable situation and that the agency is at future risk of reimbursing carrier trunking at distance-sensitive rates.

For example, H.W. (Woody) Glover, Jr., formerly Executive Director of the 9-1-1 Network of East Texas based in Tyler, recalls:

In Tyler, Texas, I had one wireless carrier that located its switch in Shreveport, Louisiana, and expected me to purchase expensive interstate circuits to bring the 9-1-1 calls back to Tyler. I maintain that they made a business decision to locate their switch in Shreveport, and they should expect to deliver the calls back to the area where the call originated.

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<sup>5</sup> Clearly, under the revised FCC cost recovery order of 1999, the TPUC is free at any time to take up the question. Until it does so, however, CSEC-TX, the CLECs and the wireless carriers need federal guidance.

MILLER & VAN EATON, P.L.L.C.

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Washington

Source: Robert Oenning, State E911 Administrator ([B.Oenning@EMD.WA.GOV](mailto:B.Oenning@EMD.WA.GOV))

In some urban areas, CLECs number more than 30. An attempt is underway to list these by county.

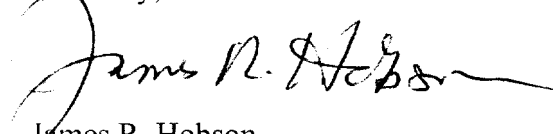
CLECs pay for their connections to SRs, considering this a standard cost of doing business. Under a legislative bargain described in Comments of the Washington State Enhanced 911 Program (dated 9/14/2000, received at FCC 9/18/2000), wireless carriers agreed to deliver Phase I ANI without cost recovery in exchange for a lower wireless E911 subscriber surcharge.<sup>6</sup> According to petitioner King County in this case, some wireless carriers nevertheless are refusing to pay the costs associated with Phase I connection to the SR.

In terms of length of trunks, which are typically distance-sensitive in price – range, \$0.13 to \$5.54 per mile in Washington – one wireless carrier connects from Bellevue to seven SRs throughout the state over distances up to 280 miles. A CLEC in Seattle is connected to four SRs up to 40 miles away. The number of SR connections does not necessarily equate to the number of trunks because trunks will be needed for each 911 service area along the way.

Based on cost verifications that remain only partial at this time, it appears that for Washington 9-1-1 authorities to pay for SR connections for CLECs and wireless carriers would add some \$3 million to \$5 million annually to state E911 expenses.

Should you have any questions about this letter or its attachments, please contact the undersigned.

Sincerely,



James R. Hobson  
Counsel for NENA

cc: Kris Monteith/Jane Phillips, PD/WTB/FCC

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<sup>6</sup> Washington State had petitioned the FCC to declare the legislative bargain valid, even though wireless carriers were not to be reimbursed for their Phase I ANI costs. In its revised cost recovery order (FCC 99-352, released December 8, 1999), at ¶74, the FCC mooted the Washington State request. With the continuing debate over cost demarcation, however, the issue is no longer moot but has emerged in another form. *See also*, letter to Thomas Sugrue from Marlys Davis of King County 911 (dated May 25, 2000 but marked as received at the FCC 8/15/2000), at page 2.

## DECLARATION OF JOHN R. MELCHER

I, John R. Melcher, pursuant to Section 1.16 of the Rules of the Federal Communications Commission, declare under penalty of perjury that the following is true and correct:

1. I am Director of Management Information Systems for the Greater Harris County 9-1-1 Emergency Network and Second Vice President of the National Emergency Number Association.
2. Both my work for Harris County and my officer's position in NENA require me to be knowledgeable about commercial wireline and wireless telephone systems and their interoperability with emergency networks used in 9-1-1 calling.
3. Based on that knowledge and on recent interviews with employees of wireline and wireless telephone companies, I believe it to be accurate to state, in terms of order of magnitude, that the ratio of commercial connections by Competitive Local Exchange Carriers ("CLECs") and wireless carriers to the Public Switched Telephone Network to the number of connections from those carriers' switches to 9-1-1 Selective Routers ranges from 500 to 1 to 1000 to 1.
4. I have found it necessary to couch this conclusion in terms of ratios because the sources of my information were reluctant to associate specific numbers of trunks with specific carriers or to give prices for those trunks.

This Declaration was executed on Feb 1, 2001.



John R. Melcher

Associated with NENA ex parte communication of 2/2/01  
in CC Docket 94-102, original to follow.

JAN 29 2001

**Affidavit of Carey F. Spence**

**THE STATE OF TEXAS**

§

**COUNTY OF TRAVIS**

§

§

BEFORE ME, the undersigned authority, this day personally appeared the undersigned affiant, who swore on oath that the following statements are true:

"1. My full name is Carey F. Spence and I am the Deputy Executive Director of the Commission on State Emergency Communications of Texas (the Texas 9-1-1 Commission) and an authorized representative of this agency. The facts stated in this affidavit are within my personal knowledge and are true and correct."

"2. Texas 9-1-1 entities have historically paid a flat trunk rate (\$39) for 9-1-1 related transport from an end office to the incumbent local exchange companies (ILECs) 9-1-1 selective routing tandem. With the advent of competition for local exchange service, many competitive local exchange companies (CLECs) have requested recovery of the end-office to the 9-1-1 selective routing tandem. The 9-1-1 entities sought to address and eliminate payment for these costs in a PUC rulemaking. The Texas PUC declined to address this issue based on lack of evidence and on the fact that a discrimination issue could exist if ILECs were reimbursed and CLECs were not. The issue of the appropriate demarcation point for purposes of cost recovery for landline transport is an issue, which the Texas 9-1-1 Commission will request the PUC to review in the current ILEC tariff cases or in a concurrent proceeding. The issue of whether the dedicated transport of 9-1-1 service is a basic cost of providing phone service or whether the dedicated transport is a cost to be borne by the 9-1-1 entities is a continuing issue and a concern to the 9-1-1 community.

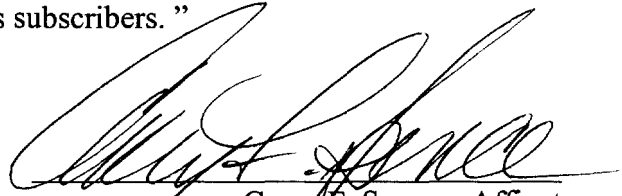
In the King County request (CC Docket No. 94-102), the FCC is considering the appropriate demarcation point for the wireless industry for purposes of 9-1-1 service. The FCC is reviewing the responsibilities related to the dedicated transport of 9-1-1 service. Some interconnection agreements (between incumbent network providers and wireless companies) reflect more traditional, mileage sensitive rates--rates that they attempted to apply to dedicated 9-1-1 trunks. The Texas 9-1-1 Commission has been successful in getting the flat rates to apply to Mobile Switching Center to Selective Router dedicated transport where an incumbent is the sole provider of network. InterLATA transport also remains an issue.

All of this (in Texas) relates to how competition is being implemented in this state, and what's basic telephone service vs. 9-1-1 network service. In Texas currently we do not pay for mileage as part of transport services but that could change in the future. Again, the main issue is responsibility between companies providing phone services and the 9-1-1 entities protecting citizens by virtue of providing 9-1-1 emergency communication services. In wireline as in wireless, the Texas 9-1-1 Commission asserts that the 9-1-1 entities should be responsible for the



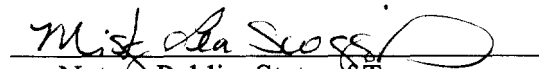
9-1-1 selective routers/tandems and transport from these routers to our public safety answering points. The Texas 9-1-1 Commission believes dedicated transport of 9-1-1 calls to the 9-1-1 selective routers/tandems should be the responsibility of those companies providing wireline and wireless phone service. How companies connect to the 9-1-1 routers/tandems should be a cost of doing business for any entity providing dial tone to its subscribers."

Further Affiant sayeth not.



Carey F. Spence, Affiant  
Deputy Executive Director,  
Commission on State Emergency Communications

SIGNED AND SWORN TO before me by Carey F. Spence on this the 23<sup>rd</sup> day of  
January, 2001

  
Notary Public, State of Texas

# National Emergency Number Association

NENA • PO Box 360960 • Columbus, Ohio 43236 • (800) 332-3911 • Fax (614) 933-0911  
www.nena9-1-1.org



## SUMMARY

### NENA Wireless E 9-1-1 Cost Study – CAS and NCAS Options

At the request of the FCC, NENA undertook an initial cost comparison between the Call Associated Signaling and Non Call Associated Signaling methods of providing Wireless E 9-1-1 service. The results are shown in the attached graph.

#### Service Model

Four Counties, with three PSAPs in each.

Each County was assumed to include an average of 20 wireless cell towers, each with three sectors, for each wireless carrier.

A Lucent 5ESS Selective Routing switch was assumed, as it is the most costly for CAS/HCAS wireless features.

Three carriers were assumed to be using NCAS, with two different third party vendors involved.

60,000 wireless subscribers across the 6 carriers, growing at a 30% per year rate.

#### Study Method and Considerations

The study deals with only those cost factors that are unique to the two methods, as time was not available to do an extensive analysis of all cost factors, which vary greatly based on the situation in a given involved service area. For instance, a major variable would be the level of technology present in the PSAP 9-1-1 equipment, in terms of ability to accept 10 or 20 digit data signaling. Those PSAPs that have kept up with new releases of PSAP CPE are typically able to handle 20 digit signaling, a major issue in using the CAS approach. Note that 20 digit signaling will soon be required in a growing number of areas for reasons other than wireless E 9-1-1, driven by Local Number Portability, NPA splits and overlays, and other reasons.

The study was done in such a way as to generally maximize CAS costs and minimize NCAS costs. If a more median approach were used, the difference would be even more pronounced. However, the PSAP CPE equipment upgrade costs are a major variable in the CAS option, as costs in this area can vary from zero to more than \$70,000 per PSAP if the present equipment cannot support 20 digit signaling and must therefore be changed out completely to support CAS (or HCAS).<sup>1</sup> Since this will have to occur in many areas anyway, as mentioned above, and a

<sup>1</sup> The slight differences between CAS and Hybrid CAS (HCAS) are shown in the attached slides bearing those labels.

significant portion of the PSAPs have equipment that does not require complete change out, an average figure of \$5000 per involved PSAP was used. In the four County, 12 PSAP model used for the study, this would add a base cost of \$60,000 to the CAS version, if the entire cost of upgrade were apportioned to the wireless effort. A more appropriate approach would be to apportion some of the cost to wireless, some to NPA expansion, etc.

Even if PSAP equipment upgrade costs were apportioned solely for wireless E 9-1-1, note that NCAS costs would increase to a point higher than CAS costs, under current third party vendor NCAS charging techniques by subscriber. CAS costs are largely initial, with a relatively small increase over time. While there are other minor variables, such as how many tower/sector codes (ESRKs)<sup>2</sup> are used for each service area, and how many PSAPs are set up as primary wireless E 9-1-1 call takers, these have comparatively insignificant impacts on the overall comparison.

If a more detailed comparison, with costs due to the other factors, is desired, this can be done, but would take several weeks to accomplish. A representative sample of the costing levels for all parties would be required.

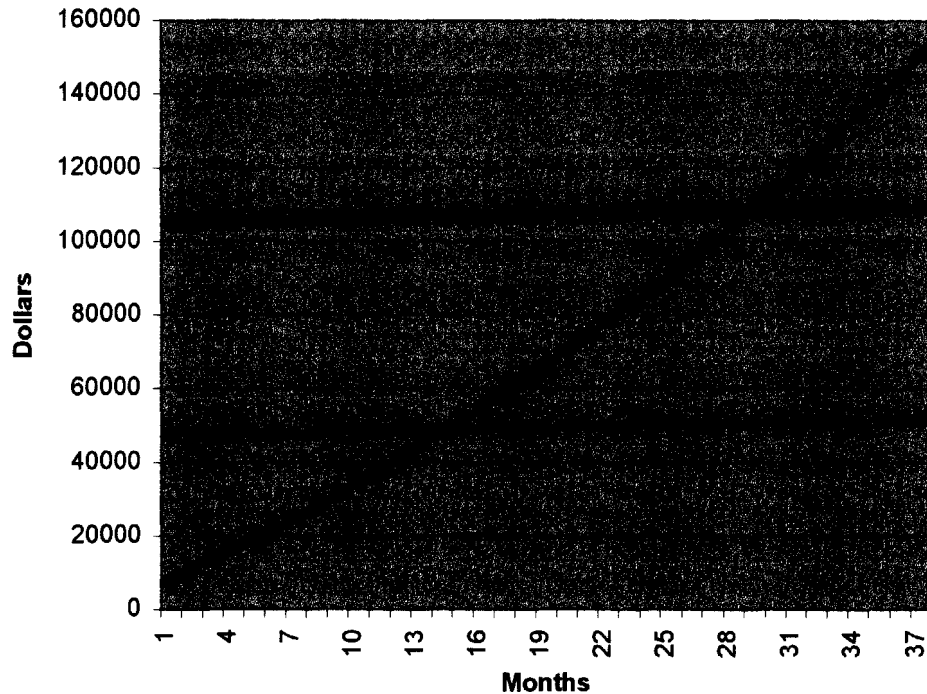
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<sup>2</sup> ESRK stands for Emergency Service Routing Key.

# CAS and NCAS Wireless E 9-1-1

## Cumulative Differential-only Costs Over Three Years

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	CAS-a	CAS-b	NCAS										
2	47320	105000	8060	Initial									
3	47440	105120	10795	Month 1									
4	47560	105240	13584										
5	47680	105360	16428										
6	47800	105480	19329										
7	47920	105600	22288										
8	48040	105720	25306										
9	48160	105840	28384										
10	48280	105960	31524										
11	48400	106080	34727										
12	48520	106200	37995	Month 10									
13	48640	106320	41329										
14	48760	106440	44730										
15	48880	106560	48199										
16	49000	106680	51739										
17	49120	106800	55351										
18	49240	106920	59037										
19	49360	107040	62798										
20	49480	107160	66636										
21	49600	107280	70553										
22	49720	107400	74550										
23	49840	107520	78629										
24	49960	107640	82792										
25	50080	107760	87041										
26	50200	107880	91378										
27	50320	108000	95804										
28	50440	108120	100322										
29	50560	108240	104933										
30	50680	108360	109640										
31	50800	108480	114445										
32	50920	108600	119350										
33	51040	108720	124357										
34	51160	108840	129468										
35	51280	108960	134686										
36	51400	109080	140013										
37	51520	109200	145452										
38	51640	109320	151005	Month 36									



CAS-a = Column A = Series 1 if PSAP equipment upgrades not needed  
CAS-b = Column B = Series 2 If PSAP equipment upgrades, avg \$5000 per PSAP (see narrative)  
NCAS = Column C = Series 3

## NCAS / CAS Differential Cost Study Calculations

### CAS-a Costs (3 of 6 carriers)

#### Notes

Initial Cost (non-recurring)		assumes PSAPs already equipped for 20 digit
SR CAS/HCAS Features	\$45,000.00	\$135,000 across 3 carriers
SR Translations	\$500.00	Prep and work time
SR-PSAP EMF Trunking convert	\$500.00	20 digit signaling to PSAP
PSAP CPE 20 Digit Upgrades		assumed available, as least cost case adds \$5000 per PSAP for higher cost version
PSAP CPE MDN-pANI Display Chg		assumed part of PSAP CPE 20 digit feature
ALI data storage fee (720 ALI and 720 MSAG)	\$120.00	\$60 per month per 1000 or part of a 1000
Fixed ALI load	\$1,200.00	720 at 5 minutes, \$20 per hour
<b>Total One-time Costs CAS</b>	<b>\$47,320.00</b>	

#### Monthly

ALI data storage fee (720 ALI and 720 MSAG)	\$120.00
---	----------

<b>CAS-b Costs - Initial</b>	<b>\$105,000.00</b>	includes \$5000 per PSAP for CPE 20 digit upgrades
- Monthly	\$120.00	same monthly as CAS-a

### NCAS Costs (3 of 6 carriers, with 2 third party vendors)

#### Initial Cost (non-recurring)

Use of SCP	\$2,400.00	at 8 cents per wireless subscriber
SCP Data Preparation		included in above
SCP Data Load		included in above
SCP-ALI Dynamic Data Links		included in above
ALI Server Ports for DDLs	\$5,200.00	per server pair, per SR, per carrier, x 2 3PVs
ALI storage fee (240 ALI and 12 MSAG)	\$60.00	12 PSAP areas, 20 ESRKs each
Fixed ALI Load	\$400.00	240 at 5 minutes, \$20 per hour
<b>Total One-time Costs NCAS</b>	<b>\$8,060.00</b>	

#### Monthly

SCP Costs	*	30% increase per year due to subscriber growth
ALI Server Ports	\$182.00	\$91 per port pair, per 3PV
ALI Storage Fee	\$60.00	
Monthly =	\$282.00	plus SCP increase at 30% subscriber growth per year (see below)

\* SCP numbers by month

2453, 2507, 2562, 2619, 2677, 2736, 2796, 2858, 2921, 2986 (month 10), 3052, 3119, 3187, 3258, 3330, 3404, 3479, 3556, 3635, 3715, 3797, 3881, 3967, 4055, 4144, 4236, 4329, 4425, 4523, 4623, 4725, 4829, 4936, 5045, 5157, 5271 (month 36)

## NCAS / CAS Differential Cost Study Calculations

See Calculations Description on next page)

### Calculations:

- CAS-a Starting with the initial non-recurring cost above, the monthly cost is added to the past month's total, generating an accumulative total cost to date for each of 36 months.
- CAS-b The initial cost includes the CAS-a initial figure plus \$60,000 (\$5000 per PSAP) for PSAP CPE upgrades to support 20 digit signaling. The monthly cost is then added, by month, to the past month's total, generating an accumulative total cost to date for each of 36 months.
- NCAS Starting with the initial non-recurring cost, the monthly costs of \$282 and the SCP cost for that month (calculated at a 30% yearly subscriber growth rate) are added to the last month's total, generating an accumulative total cost to date for each of 36 months.

RCH

## Wireless E 9-1-1 Significant Cost Factors

CAS Cost Item	Cost Factor	HCAS Cost Item	Cost Factor	NCAS Cost Item	Cost Factor	Notes	Cost Orig	Cost Charged To
Cell Sector Routing Definition		Cell Sector Routing Definition		Cell Sector Routing Definition		Similar costs all methods, Est about 15 cts / s	WC or 3PV	WC
MSC switch translations		MSC switch translations		MSC switch translations			WC	WC
NA		NA		Use of SCP	Est about 8 cts / sub	Usually 3rd party vendor	3PV	WC
NA		NA		SCP Data Preparation	incl in 8 cts above	Usually 3rd party vendor	3PV	WC
NA		NA		SCP Data Load	incl in 8 cts above	Usually 3rd party vendor	3PV	WC
NA		NA		SCP ALI Dynamic Data Links	incl in 8 cts above	3PV to SSP ALI servers	3PV	WC
NA		NA		Local Data Base DDLs	(not in initial model)	Where PSAPs maintain non-regional DBs	3PV	WC
NA		NA		ALI Server Ports for DDLs	\$2600 per server pair	per carrier per SR connection	SSP	3PV to WC
T1 Facility from MSC to SR		T1 Facility from MSC to SR		T1 Facility from MSC to SR		\$700 NRC, \$200 RC	SSP	WC
MSC-SR Message Trunking if CAMA		MSC-SR Message Trunking if CAMA		MSC-SR Message Trunking if CAMA		\$500 NRC CAMA may require added MSC feature	SSP WC	WC WC
SR Trunk Translations		SR Trunk Translations		SR Trunk Translations		\$200 NRC	WC and SSP	WC
SR CAS/HCAS Features		SR CAS/HCAS Features		NA		\$87K list DMS-100, \$135K list 5E SR if EMF	Switch vendor via SS	WC
NA		DMS-100 SR - MPC links	\$6K per server pair	NA			SSP	WC
SR Translations		SR Translations		NA		\$500 NRC	SSP	WC
SR-PSAP EMF Trunking	\$500 NRC	SR-PSAP EMF Trunking *	\$500 NRC	SR-PSAP CAMA Trunking	In Place	Conversion of CAMA to EMF	SSP	PSAP
Added SR-PSAP Trunks		Added SR-PSAP Trunks		Added SR-PSAP Trunks				
PSAP CPE 20 digit Upgrades	\$5000 avg per PSA	PSAP CPE 20 digit Upgrades *	\$5000 avg per PSA	NA		Required over time anyway	CPE	PSAP
PSAP CPE MDN-PANI Display Cn	Incl in 34 above	NA		NA		PSAP software must display MDN but query	CPE	PSAP
ALI data storage fee	\$60 /mo/ 1000 or par	ALI data storage fee	\$60 /mo/ 1000 or pa	ALI data storage fee	\$60 /mo/ 1000 or part	Typically per 1000 ESRD or ERSK records	SSP	3PV or WC
Wireless MSAG records prep		Wireless MSAG records prep		Wireless MSAG record prep		NCAS is base record only, per PSAP	PSAP, SSP, or 3PV	No charge?
Wireless MSAG records load		Wireless MSAG records load		Wireless MSAG record load		NCAS is base record only, per PSAP	PSAP or SSP	No charge?
		Fixed ALI load		Fixed ALI load	(less data content than other options)		WC or 3PV	WC
Overall System Testing		Overall System Testing		Overall System Testing			WC, 3PV, SSP	WC
Call / Drive Testing		Call / Drive Testing		Call / Drive Testing			WC, 3PV, PSAP	WC
NA		Per Call dynamic data update		Per Call dynamic data update		MDN update via signaling content - zero? Part of the 8 cent charge in 7-15 above ?	WC 3PV	WC WC

\* can be done with 8 digit CAMA to PSAP when SR is DMS-100

### Legend:

WC = wireless carrier  
 3PV = 'third party' vendor  
 SSP = E 9-1-1 service system provider  
 CPE = PSAP customer premise eqpt  
 PSAP = Public Safety Answering Point

Service Model - see next page

## Wireless E 9-1-1 Significant Cost Factors

Signifies items used in differential comparison

Cost Orig = Cost Originator ie who is involved re incurring and charging the cost

### SERVICE MODEL:

6 wireless carriers      Two 3rd Party Vendors for the NCAS option      Average of 20 towers, 3 faced, per County per carrier 360 sectors per County

1 Selective Router      5ESS, as it is the most costly for CAS/HCAS wireless features

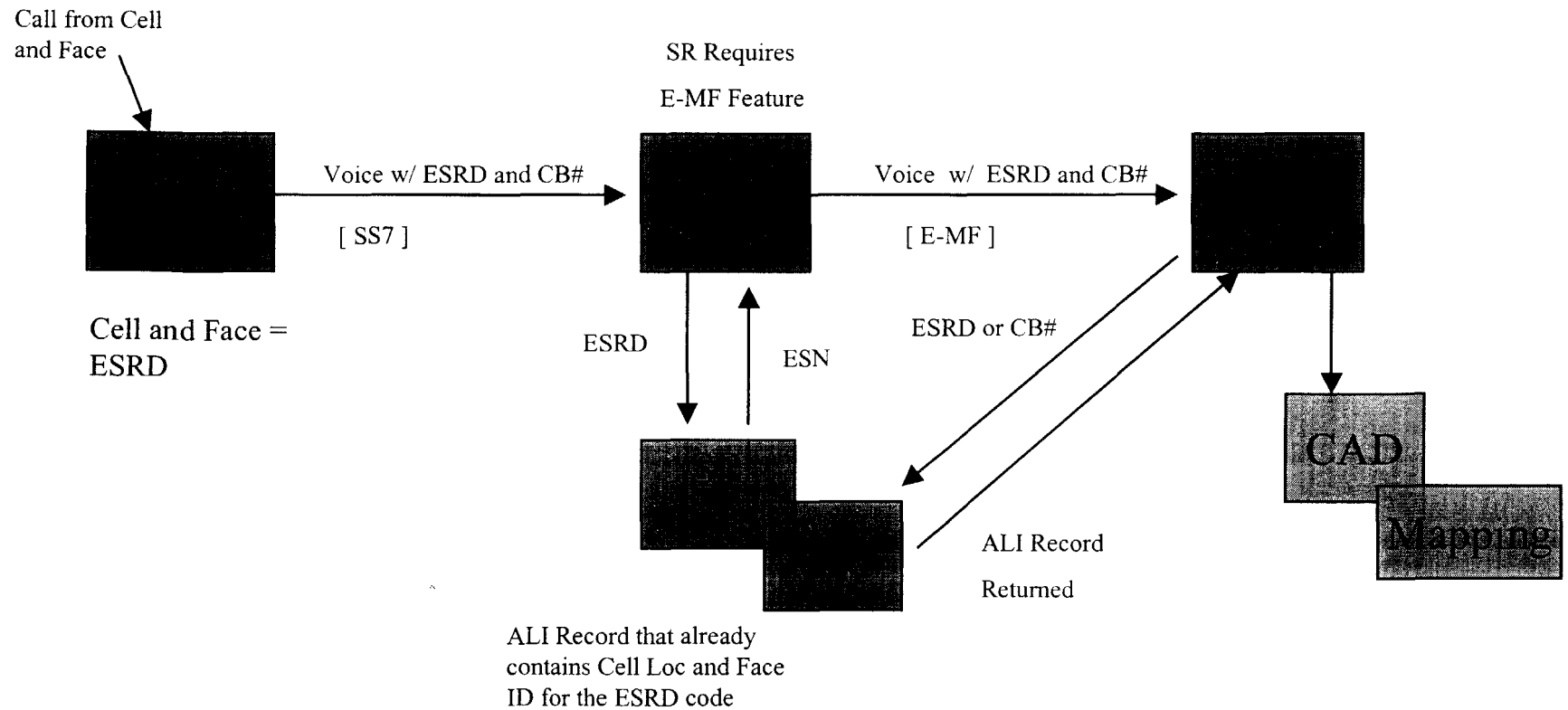
4 Counties, 3 PSAPs each

60,000 subscribers among the 6 carriers, growing at 30% per year



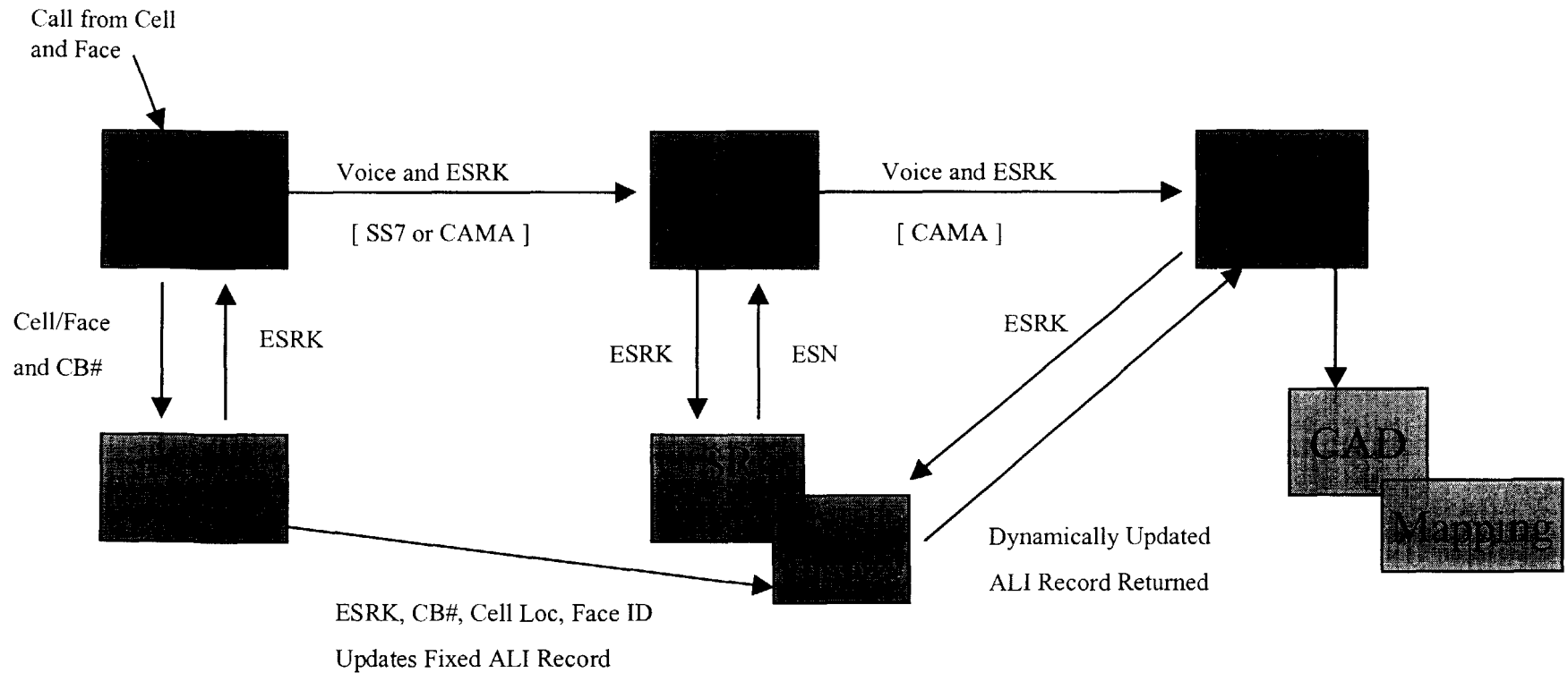
# Wireless Phase 1 Solutions

## CAS



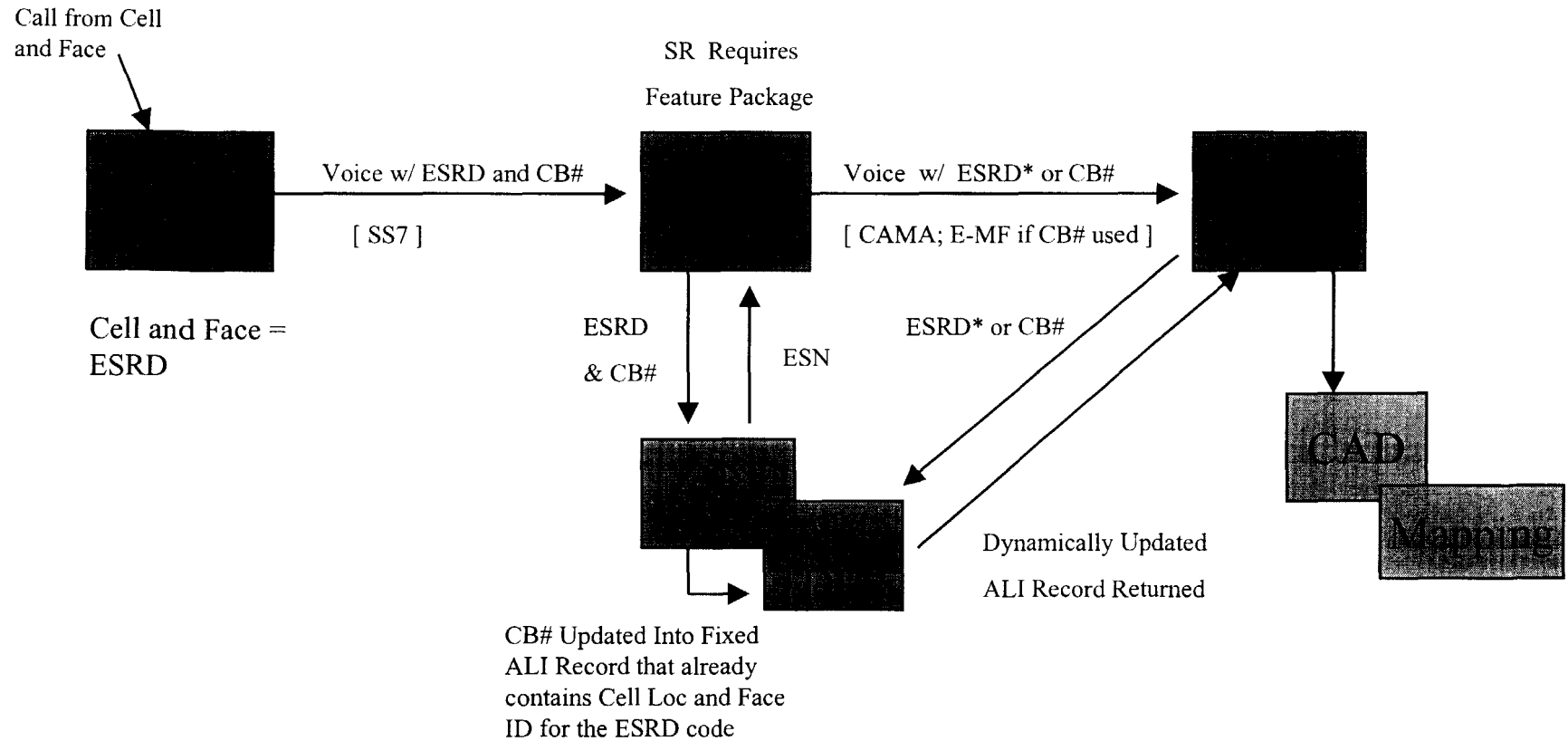
# Wireless Phase 1 Solutions

## NCAS



# Wireless Phase 1 Solutions

## Hybrid CAS



\* May be CALLID in DMS-100 SRs